

Title (en)
Imaging methods and apparatus.

Title (de)
Bildverfahren-und Geräte.

Title (fr)
Méthodes et appareils d'imagerie.

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EP 0592093 A3 19950405 (EN)

Application
EP 93306596 A 19930820

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US 95680592 A 19921005

Abstract (en)
[origin: EP0592093A2] Radiation passing through a cone beam collimator is received by a radiation detector (10) such as a gamma camera head, as the gamma camera head is moved in a helical orbit. Data $g(n,u,v)$ collected during the helical orbit is scaled (42) to scaled data $G(n,u,v)$. A first partial derivative DIFFERENTIAL $G(n,u,v)/\text{DIFFERENTIAL } u$ is taken (46u) with respect to a horizontal direction and a second partial derivative DIFFERENTIAL $G(n,u,v)/\text{DIFFERENTIAL } v$ is taken (46v) with respect to a vertical direction. The partial derivatives are linearly combined (48) by being multiplied by sine and cosine values of an angle α between the horizontal direction u and an arbitrary direction p in the detector plane to form partial derivatives DIFFERENTIAL $G(n,u,v)/\text{DIFFERENTIAL } p$. The coordinate system of the derivatives is converted (60) from the (n,u,v) coordinate system to an (n, α, p) coordinate system. The first derivatives are projected (62), i.e. summed row by row, onto a q axis which is perpendicular to the p arbitrary direction. The one-dimensional projection arrays are rebinned (70) to form first derivative Radon domain data $R'(\theta, \rho)$. A second derivative $R''(\theta, \rho)$ is taken (74) of the Radon domain data. The second derivative Radon domain data is backprojected (80) into an image memory (82) and displayed on a video monitor (84). <IMAGE>

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IPC 8 full level
G01T 1/161 (2006.01); **A61B 6/03** (2006.01); **G06T 1/00** (2006.01); **G06T 11/00** (2006.01)

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Citation (search report)
• [A] EP 0292402 A1 19881123 - COMMISSARIAT ENERGIE ATOMIQUE [FR]
• [A] YAN ET AL.: "cone beam tomography with circular, elliptical and spiral orbits", PHYSICS IN MEDICINE AND BIOLOGY, vol. 37, no. 3, UK, pages 493 - 506, XP020021955, DOI: doi:10.1088/0031-9155/37/3/001
• [A] KUDO ET AL.: "feasible cone beam scanning methods for exact reconstruction in three-dimensional tomography", JOURNAL OF THE OPTICAL SOCIETY OF AMERICA A(OPTICS AND IMAGE SCIENCE), vol. 7, no. 12, USA, pages 2169 - 2183, XP002102879
• [A] GRANGEAT ET AL.: "recentes evolutions de la tomographie 3D en geometrie conique", TREZIÈME COLLOQUE SUR LE TRAITEMENT DU SIGNAL ET DES IMAGES, 16 September 1991 (1991-09-16), FR, pages 817 - 820, XP000242901

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